Notice of Allowability	Application No.	Applicant(s)	
	09/736,163	YOSHIMI, KOICHI	
	Examiner	Art Unit	
	Aimee J. Li	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *19 December 2005*.

2. ☒ The allowed claim(s) is/are *11, 12, 14, 15, 17, 18, and 19-24 renumbered as 2, 1, 4, 3, 6, 5, and 7-12 respectively*.

3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 11/17/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with J. Randall Beckers (Reg. No 30,358) and Temnit Afework (Reg. No. 58,202) on 21 February 2006 and Temnit Afework (Reg. No. 58,202) on 01 March 2006.

3. The application has been amended as follows:

a. Claim 12 renumbered as claim 1 –

i. An arithmetic and logic unit, comprising:

(1) A first part performing a branch prediction in response to a branch instruction;

(2) A second pad updating a transition probability of the branch prediction according to whether a branch is actually made;

(3) A third part detecting that a process is switched; and

(4) A fourth part initializing branch prediction information when the third part detects that the process is switched; and

(5) Wherein the fourth part fixedly performs initialization of the branch prediction information by determining an initialization value according to a comparison of a program counter value with a branch destination address and a determination of whether a

branch prediction direction is backward taken (BT) or forward not taken (FN) to set the branch prediction information to ~~predetermined branch prediction information~~ the determined initialization value regardless of past branch prediction results, without depending on a particular process.

b. Claim 15 renumbered as claim 3 –

i. A branch prediction method, comprising:

(1) Performing a branch prediction in response to a branch instruction;

(2) Updating a transition probability of the branch prediction according to whether a branch is actually made;

(3) Detecting that a process is switched', and

(4) Initializing branch prediction information when said detecting detects that the process is switched, and

(5) Wherein said initializing includes fixedly performing initialization of the branch prediction information by determining an initialization value according to a comparison of a program counter value with a branch destination address and a determination of whether a branch prediction direction is backward taken (BT) or forward not taken (FN) to set the branch prediction information to ~~predetermined branch prediction information~~ the determined initialization value regardless of past branch prediction results, without depending on a particular process.

c. Claim 18 renumbered as claim 5 –

i. An information processing apparatus comprising:

(1) A first part performing a branch prediction in response to a branch instruction;

(2) A second part updating a transition probability of the branch prediction according to whether a branch is actually made;

(3) A third part detecting that a process is switched; and

(4) A fourth part initializing branch prediction information when the third part detects that the process is switched, and

(5) Wherein the fourth part fixedly performs initialization of the branch prediction information by determining an initialization value according to a comparison of a program counter value with a branch destination address of the branch instruction and a determination of whether a branch prediction direction is backward taken (BT) or forward not taken (FN), to set the branch prediction information to ~~predetermined branch prediction information~~ the determined initialization value regardless of past branch prediction results, without depending on a particular process.

d. Claim 19 renumbered as claim 7 –

i. A method of performing a branch prediction in response to a branch instruction, comprising:

(1) Detecting whether a process is switched; and

(2) Setting the branch prediction to predetermined branch prediction information regardless of past branch prediction results upon detecting that the process is switched, and

(3) Where the predetermined branch prediction information is initialized according to a branch destination address of the branch instructions without depending on a particular process, based on a determination of an initialization value according to a comparison of a program counter value with the branch destination address and a determination of whether a branch prediction direction is backward taken (BTJ or forward not taken (FN).

e. Claim 20 renumbered as claim 8 –

i. A method of performing a branch prediction in response to branch instructions, comprising:

(1) Storing branch prediction information based on past branch results in relation to the branch instructions;

(2) Detecting whether a process switch has occurred based on a program count address; and

(3) Setting a branch prediction in relation to one of the branch instructions to a predetermined branch prediction regardless of the stored branch prediction information upon detecting that the process has switched and the predetermined branch prediction is determined in accordance with a determination of an initialization

value based on a comparison of a program counter value with a branch destination address and a determination of whether a branch prediction direction is backward taken (BT) or forward not taken (FN).

f. Claim 21 renumbered as claim 9 –

i. An arithmetic and logic unit, comprising:

(1) A first part performing a branch prediction in response to a branch instruction;

(2) A second pad updating a transition probability of the branch prediction according to whether a branch is actually made;

(3) A third part detecting that a process is switched; and

(4) A fourth part initializing branch prediction information when the third part detects that the process has switched, and

(5) Wherein the fourth part performs the initialization of branch prediction information according to a branch destination of the branch instruction by determining an initialization value according to a comparison of a program counter value with a branch destination address and a determination of whether a branch prediction direction is backward taken (BT) or forward not taken (FN).

g. Claim 23 renumbered as claim 11 –

i. An information processing apparatus, comprising:

(1) A first part performing a branch prediction in response to a branch instruction;

(2) A second part updating a transition probability of the branch prediction according to whether a branch is actually made;

(3) A third part detecting that a process is switched; and

(4) A fourth part initializing branch prediction information when the third part detects that the process is switched; and

(5) Wherein the fourth part performs ~~initialization~~ said initializing branch prediction information according to a branch destination of the branch instruction by determining an initialization value according to a comparison of a program counter value with a branch destination address and a determination of whether a branch prediction direction is backward taken (BT) or forward not taken (FN).

h. Claim 24 renumbered as claim 12 –

i. A method of performing a branch prediction in response to a branch instruction, comprising:

(1) Setting the branch prediction to branch prediction information indicative of a branch prediction direction upon a switch from a first process to a second process;

(2) Initializing the branch prediction information by determining an initialization value based on a comparison of a program counter value with a branch destination address; and

(3) Selectively outputting branch prediction direction information backward taken (BT) and branch direction information forward not taken (FN) based on the comparison such that when the branch destination address is smaller than the program counter value the branch prediction direction information backward taken (BT) is output and the branch prediction information is set to the determined initialization value.

4. The following is an examiner's statement of reasons for allowance: Taking independent claim 12, renumbered as claim 1, as exemplary, the independent claims recite in some form "a fourth part initializing branch prediction information...and wherein the fourth part fixedly performs initialization of the branch prediction information by determining an initialization value...and a determination...to set the branch prediction information to the determined initialization value..." The prior art searched and found have disclosed individual parts and steps but have not disclosed all these parts or steps combined in such a manner and provided no reasons to combine the steps in such a manner. Specifically, the prior art searched and found has not taught that the branch prediction information is set to the result of a comparison between the program counter value and a branch destination address and determining the direction of the branch prediction based upon the comparison.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aimee J. Li whose telephone number is (571) 272-4169. The examiner can normally be reached on M-T 7:00am-4:30pm.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AJL
Aimee J. Li
1 March 2006

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